

**APPENDIX F**  
**COMMON UNIT CONVERSIONS FOR METRIC - ENGLISH MEASURES**

(Caterpillar Performance Handbook, Peoria IL, Oct. 1989, ed. 20, p. 900)

**CONVERSION FACTORS**

Multiply Metric Unit	By	To Obtain English Unit	Multiply English Unit	By	To Obtain Metric Unit
kilometer (km)	.6214	mile	mile, statute (m)	1.609	kilometer
meter (m)	1.0936	yard	yard (yd)	.9144	meter
centimeter (cm)	.0328	foot	foot (ft)	.3048	meter
millimeter (mm)	.03937	inch	inch (in)	25.4	millimeter
sq kilometer ( $\text{km}^2$ )	.3861	square mile	sq mile ( $\text{mi}^2$ )	2.590	sq kilometer
hectare (ha)	2.471	acre	acre	.4047	hectare
sq meter ( $\text{m}^2$ )	10.764	square foot	sq foot ( $\text{ft}^2$ )	.0929	sq meter
sq meter ( $\text{m}^2$ )	1550	square inch	sq inch ( $\text{in}^2$ )	.000645	sq meter
sq centimeter ( $\text{cm}^2$ )	.1550	square inch	cu yard ( $\text{yd}^3$ )	.7645	cu meter
cu centimeter ( $\text{cm}^3$ )	.061	cubic inch	cu inch ( $\text{in}^3$ )	16.387	cu centimeter
cu meter ( $\text{m}^3$ )	1.308	cubic yard	cu foot ( $\text{ft}^3$ )	.0283	cu meter
liter (L)	61.02	cubic inch	cu inch ( $\text{in}^3$ )	.0164	liter
liter (L)	.001308	cubic yard	cubic yard ( $\text{yd}^3$ )	764.55	liter
km/h	.621	mph	mph	1.61	km/h
liter (L)	.2642	U.S. gallon	Ton — mph	1.459	tkm/h
liter (L)	.22	Imperial gallon	U.S. gallon (US Gal)	3.785	liter
metric ton (t)	.984	long ton	U.S. gallon	.833	Imperial gallon
metric ton (t)	1.102	short ton	long ton (lg ton)	1.016	metric ton
kilogram (kg)	2.205	pound, avdp.	short ton (sh ton)	.907	metric ton
gram (g or gr)	.0353	ounce, avdp.	pound (lb)	.4536	kilogram
kilonewton (kN)	225	pound	ounce (oz)	28.35	gram
newton (N)	.225	pound	pound (lb)	.00445	kilonewton
cu centimeter ( $\text{cm}^3$ )	.0338	fluid ounce	fluid oz (fl oz)	4.45	newton
kilograms/cu meter	1.686	pounds/cu. yd.	lb/cu ft ( $\text{lb}/\text{ft}^3$ )	29.57	cu centimeter
kilograms/cu meter	.062	pounds/cu. ft.	lb/cu yd ( $\text{lb}/\text{yd}^3$ )	16.018	kg/cu meter
kilograms/sq cm ( $\text{kg}/\text{cm}^2$ )	14.225	pounds/sq in	pounds/sq. in.	.5933	kg/cu meter
kilocalorie (kcal)	3.968	Btu	psi	.0703	kilogram/sq cm
kilogram-meter ( $\text{kg}\cdot\text{m}$ )	7.233	foot-pound	psi	.0689	bar
meter-kilogram ( $\text{m}\cdot\text{kg}$ )	7.233	pound-foot	Btu	6.89	kilopascal
metric horsepower (CV)	.9863	hp	foot-pound (ft-lb)	.2520	kilogram-calorie
kilowatt (kW)	1.341	hp	horsepower (hp)	.1383	kilogram-meter
kilopascal (kPa)	.145	psi	horsepower (hp)	1.014	metric horsepower
bar	14.5	psi	pounds/cu yd	.7457	kilowatt
tons/m <sup>2</sup>	1692	pounds/cu. yd.	pounds (No. 2 diesel fuel)	.0005928	tons/m <sup>2</sup>
			pounds (No. 2 diesel fuel)	.1413	U.S. gallon

NOTE: Some of the above factors have been rounded for convenience. For exact conversion factors please consult International System of Units (SI) table.

**METRIC UNIT EQUIVALENTS**

1 km	=	1000 m
1 m	=	100 cm
1 cm	=	10 mm
1 $\text{km}^2$	=	100 ha
1 ha	=	10,000 $\text{m}^2$
1 $\text{m}^2$	=	10,000 $\text{cm}^2$
1 $\text{cm}^2$	=	100 $\text{mm}^2$
1 $\text{m}^3$	=	1000 liters
1 liter	=	1000 $\text{cm}^3$
1 metric ton	=	1000 kg
1 quintal	=	100 kg
1 N	=	0.10197 kg
1 kg	=	1000 g
1 g	=	1000 mg
1 bar	=	14.504 psi
1 cal	=	427 $\text{kg}\cdot\text{m}$
	=	0.0016 $\text{cv}\cdot\text{h}$
	=	0.00116 $\text{kW}\cdot\text{h}$
torque unit		
1 CV	=	75 $\text{kg}\cdot\text{m/s}$
1 $\text{kg}/\text{cm}^2$	=	0.97 atmosph.

**ENGLISH UNIT EQUIVALENTS**

1 mile	=	1760 yd
1 yd	=	3 ft
1 ft	=	12 in
1 sq mile	=	640 acres
1 acre	=	43,560 sq ft
1 sq ft	=	144 sq in
1 cu ft	=	7.48 gal liq
1 gal	=	231 cu in
	=	4 quarts liq
1 quart	=	32 fl oz
1 fl oz	=	1.80 cu in
1 sh ton	=	2000 lb
1 lg ton	=	2240 lb
1 lb	=	16 oz, avdp.
1 Btu	=	778 ft lb
	=	0.000393 hph
	=	0.000293 kwh
1 hp	=	550 ft-lb/sec
1 atmosph.	=	14.7 lb/in <sup>2</sup>